potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) **WQBEL's.** The receiving water contains assimilative capacity for bis (2-ethylhexyl) phthalate; therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a dilution credit of 55:1 may be allowed in the development of the WQBEL's for bis (2-ethylhexyl) phthalate. However, the Central Valley Water Board finds that granting of this dilution credit would allocate an unnecessarily large portion of the receiving water's assimilative capacity for bis (2-ethylhexyl) phthalate and could violate the Antidegradation Policy. Therefore, this Order contains an AMEL of 8.9 µg/L and MDEL of 20 µg/L for bis (2-ethylhexyl) phthalate based on Facility performance.

(d) **Plant Performance and Attainability.** The effluent limitations for bis (2-ethylhexyl) phthalate are based on Facility performance. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iii. **Carbon Tetrachloride**

(a) **WQO.** The CTR includes a criterion of 0.25 µg/L for carbon tetrachloride for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** The MEC for carbon tetrachloride was 2.9 µg/L based on 41 samples collected between January 2012 and December 2014. Carbon tetrachloride was not detected in the upstream receiving water based on 12 samples collected between January 2012 and December 2014. Therefore, carbon tetrachloride in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) **WQBEL's.** The receiving water contains assimilative capacity for carbon tetrachloride; therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a dilution credit of 55:1 may be allowed in the development of the WQBEL's for carbon tetrachloride. However, the Central Valley Water Board finds that granting of this dilution credit would allocate an unnecessarily large portion of the receiving water's assimilative capacity for carbon tetrachloride and could violate the Antidegradation Policy. Therefore, this Order retains the performance-based MDEL of 5.3 µg/L from Order R5-2010-0114-04. Additionally, to be consistent with the SIP, which requires establishment of AMEL's for priority pollutants, this Order includes an AMEL of 2.9 µg/L calculated considering effluent variability using the AMEL/MDEL multipliers in Table 2 of the SIP.

(d) **Plant Performance and Attainability.** The effluent limitations for carbon tetrachloride are based on Facility performance. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iv. **Chlorine Residual**

(a) **WQO.** U.S. EPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and

0.019 mg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

(b) **RPA Results.** The concentrations of chlorine used to disinfect wastewater are high enough to harm aquatic life and violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore does exist and effluent limits are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.*" For priority pollutants, the SIP dictates the procedures for conducting the RPA. Chlorine is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.*" With regard to POTW's, U.S. EPA recommends that, "*POTW's should also be characterized for the possibility of chlorine and ammonia problems.*" (TSD, p. 50)

The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. Although the Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to the Sacramento River, the existing chlorine use and the potential for chlorine to be discharged provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) **WQBEL's.** The U.S. EPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will

be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 mg/L and 0.019 mg/L, respectively, based on U.S. EPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for protection of aquatic life.

(d) **Plant Performance and Attainability.** The Discharger is unable to immediately comply with the final effluent limitations for total residual chlorine. Previous Order R5-2010-0114-04 allowed the Discharger until 1 December 2020 to comply with the final effluent limitations for total residual chorine. This Order carries forward this effective date for compliance with the final effluent limitations.

v. **Chlorodibromomethane**

(a) **WQO.** The CTR includes a criterion of 0.41 µg/L for chlorodibromomethane for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** The MEC for chlorodibromomethane was 0.33 µg/L based on 41 samples collected between January 2012 and December 2014. Chlorodibromomethane was not detected in the upstream receiving water based on 12 samples collected between January 2012 and December 2014. Although the effluent concentrations of chlorodibromomethane did not exceed the CTR criterion, effluent concentrations of chlorodibromomethane are expected to increase upon completion of upgrades to provide ammonia and nitrate removal. Therefore, chlorodibromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) **WQBEL's.** The receiving water contains assimilative capacity for chlorodibromomethane; therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a dilution credit of 55:1 is allowed in the development of the WQBEL's for chlorodibromomethane. Based on the allowable dilution credit, this Order contains an AMEL of 14 µg/L and MDEL of 27 µg/L for chlorodibromomethane.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 0.33 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vi. **Copper**

(a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA translators were used for the receiving water and effluent. As described in section IV.C.2.e of this Fact Sheet, the applicable acute (1-hour average) and chronic (4-day average) criteria for copper in the effluent are 12 µg/L and 8.0 µg/L, respectively, as total recoverable.

(b) **RPA Results.** The MEC for copper was 10 µg/L (as total recoverable) based on 108 samples collected between January 2012 and December 2014. The maximum observed upstream receiving water concentration was 5.8 µg/L (as total recoverable) based on 25 samples collected between January 2012 and December 2014. Therefore, copper in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life.

(c) **WQBEL's.** The receiving water contains assimilative capacity for copper and a chronic aquatic life criteria mixing zone has been allowed, as discussed further in section IV.C.2.c of this Fact Sheet. For copper the dynamic modeling approach described in Section IV.C.4.f has not been used to calculate the WQBELs. Instead, the Discharger's model was used to determine the dilution factor at the edge of the 60 foot chronic aquatic life mixing zone and the long-term average was calculated using the SIP's steady-state modeling approach. Considering a chronic aquatic life mixing zone with a dilution factor of 2.45, and no mixing zone for acute criteria, the WQBELs for copper are an AMEL of 8.6 µg/L and MDEL of 12 µg/L, based on the CTR criteria for the protection of freshwater aquatic life.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 10 µg/L is less than the applicable MDEL and the maximum monthly average concentration of 7.7 µg/L is less than the applicable AMEL. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vii. **Cyanide**

(a) **WQO.** The CTR includes maximum 1-hour average and 4-day average criteria of 22 µg/L and 5.2 µg/L, respectively, for total recoverable cyanide for the protection of freshwater aquatic life.

(b) **RPA Results.** The MEC for cyanide was 8.6 µg/L based on 81 samples collected between January 2012 and December 2014. The maximum observed upstream receiving water concentration was 0.77 µg/L (as total recoverable) based on 12 samples collected between January 2012 and December 2014. Therefore, cyanide in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life.

(c) **WQBEL's.** The receiving water contains assimilative capacity for cyanide and a chronic aquatic life criteria mixing zone has been allowed, as discussed further in section IV.C.2.c of this Fact Sheet. Based on the allowed chronic aquatic life mixing zone this Order contains a final AMEL and MDEL for cyanide of 13 µg/L and 22 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 8.6 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

viii. **Dichlorobromomethane**

(a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** The MEC for dichlorobromomethane was 2.3 µg/L based on 41 samples collected between January 2012 and December 2014. Dichlorobromomethane was not detected in the upstream receiving water based on 12 samples collected between January 2012 and December 2014. Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) **WQBEL's.** The receiving water contains assimilative capacity for dichlorobromomethane; therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a dilution credit of 55:1 may be allowed in the development of the WQBEL's for dichlorobromomethane. Based on the allowable dilution credit, this Order contains a final AMEL of 23 µg/L and MDEL of 36 µg/L for dichlorobromomethane.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 2.3 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ix. **Mercury**

(a) **WQO.** The Basin Plan contains fish tissue objectives for all Delta waterways listed in Appendix 43 of the Basin Plan that states *"…the average methylmercury concentrations shall not exceed 0.08 and 0.24 mg methylmercury/kg, wet weight, in muscle tissue of trophic level 3 and 4 fish, respectively (150-500 mm total length.) The average methylmercury concentrations shall not exceed 0.03 mg methylmercury/kg, wet weight, in whole fish less than 50 mm in length*". The Delta Mercury Control Program contains aqueous methylmercury wasteload allocations that are calculated to achieve these fish tissue objectives. Methylmercury reductions are assigned to dischargers with concentrations of methylmercury greater than 0.06 mg/L (the concentration of methylmercury in water to meet the fish tissue objective). The Facility is allocated 89 grams/year of methylmercury by 31 December 2030, as listed in Table IV-7B of the Basin Plan.

The CTR contains a human health criterion of 50 ng/L for total mercury for waters from which both water and aquatic organisms are consumed. However, in 40 C.F.R. part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that *"…more stringent mercury limits may be determined and implemented through the use of the State's narrative criterion.*" In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

(b) **RPA Results.** Section 1.3 of the SIP states, "*The RWQCB shall conduct the analysis in this section for each priority pollutant with an applicable criterion or objective,* ***excluding priority pollutants for which a TMDL***

has been developed, to determine if a water quality-based effluent limitation is required in the discharger's permit." (emphasis added).

The MEC for mercury was 8.2 ng/L based on 115 samples collected between January 2012 and December 2014. The maximum observed upstream receiving water mercury concentration was 5.9 ng/L based on 25 samples collected between January 2012 and December 2014.

The MEC for methylmercury was 0.65 ng/L based on 40 samples collected between January 2012 and December 2014. The maximum observed upstream receiving water methylmercury concentration was 0.17 ng/L based on 13 samples collected between January 2012 and December 2014.

(c) **WQBEL's.** The Basin Plan's Delta Mercury Control Program includes wasteload allocations for POTW's in the Delta, including for the Discharger. This Order contains a final WQBEL for methylmercury based on the wasteload allocation. Effective 31 December 2030, the total calendar annual methylmercury load shall not exceed 89 grams.

(d) **Plant Performance and Attainability.** Based on available effluent methylmercury data, the Central Valley Water Board finds the Discharger is unable to immediately comply with the final WQBEL's for methylmercury. Therefore, a compliance schedule in accordance with the State Water Board's Compliance Schedule Policy and the Delta Mercury Control Program has been established in Section VI.C.7.c this Order. The final WQBEL's are effective 31 December 2030.

x. **Methylene Chloride**

(a) **WQO.** The CTR includes a criterion of 4.7 µg/L for methylene chloride for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** The MEC for methylene chloride was 5 µg/L based on 41 samples collected between January 2012 and December 2014. Methylene chloride was not detected in the upstream receiving water based on 12 samples collected between January 2012 and December 2014. Therefore, methylene chloride in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of human health.

(c) **WQBEL's.** Although the receiving water contains assimilative capacity for methylene chloride and, as discussed in section IV.C.2.c of this Fact Sheet, a dilution credit of 55:1 may be allowed in the development of the WQBEL's for human health criteria, the Discharger can immediately comply with the applicable WQBEL's without dilution. Therefore, consistent with Order R5-2010-0114-04, this Order does not allow dilution for methylene chloride. This Order contains a final AMEL and MDEL for methylene chloride of 4.7 µg/L and 11 µg/L, respectively, based on the CTR criterion for the protection of human health.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 5 µg/L is less than the applicable MDEL and the maximum observed monthly average of 1.3 µg/L is less than the

applicable AMEL. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

xi. **Nitrate and Nitrite**

(a) **WQO.** DDW has adopted Primary MCL's for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DDW has also adopted a Primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

U.S. EPA has developed a Primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, U.S. EPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects).

(b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that is harmful to fish and exceeds the Basin Plan's narrative toxicity objective. This Order, therefore, requires removal of ammonia (i.e., nitrification). Nitrification is a biological process that converts ammonia to nitrate and nitrite, and will result in effluent nitrate concentrations above the Primary MCL for nitrate plus nitrite. Nitrate concentrations in a drinking water supply above the Primary MCL threatens the health of human fetuses and newborn babies by reducing the oxygen-carrying capacity of the blood (methemoglobinemia). Reasonable potential for nitrate and nitrite therefore exists and WQBEL's are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.*" For priority pollutants, the SIP dictates the procedures for conducting the RPA. Nitrate and nitrite are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where*

facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data." With regard to POTW'S, U.S. EPA recommends that, "*POTW's should also be characterized for the possibility of chlorine and ammonia problems.*" (TSD, p. 50)

The concentration of nitrogen in raw domestic wastewater is sufficiently high that the resultant treated wastewater has a reasonable potential to exceed or threaten to exceed the Primary MCL for nitrate plus nitrite unless the wastewater is treated for nitrogen removal, and therefore an effluent limit for nitrate plus nitrite is required. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger does not currently use nitrification to remove ammonia and effluent concentrations of nitrate and nitrite are low. However, this Order requires the Discharger to fully nitrify its effluent. The ammonia will convert to nitrate and the nitrate concentrations will increase. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrate plus nitrite in concentrations that exceed the Primary MCL would violate the Basin Plan narrative chemical constituents objective. Inadequate or incomplete denitrification creates the potential for nitrate and nitrite to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for nitrate plus nitrite and WQBEL's are required.

(c) **WQBEL's.** This Order contains an AMEL and AWEL for nitrate plus nitrite of 10 mg/L and 22 mg/L, respectively, based on the Basin Plan's narrative chemical constituents objective for protection of the MUN beneficial use. These effluent limitations are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.

(d) **Plant Performance and Attainability.** The maximum effluent nitrate and nitrite concentrations of 0.52 mg/L and 0.084 mg/L, respectively, are below the WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

xii. **Pathogens**

(a) **WQO.** DDW has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL, at any time.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as "*...an impoundment of*

recycled water, in which no limitations are imposed on body-contact water recreational activities." Title 22 is not directly applicable to surface waters; however, the stringent disinfection criteria of Title 22 may be appropriate in the site-specific circumstances of a discharge where the irrigation of food crops and/or for body-contact water recreation are beneficial uses. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens.

(b) **RPA Results.** Raw domestic wastewater inherently contains human pathogens that threaten human health and life, and constitute a threatened pollution and nuisance under Water Code Section 13050 if discharged untreated to the receiving water. Reasonable potential for pathogens therefore exists and WQBEL's are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.*" For priority pollutants, the SIP dictates the procedures for conducting the RPA. Pathogens are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.*" (TSD, p. 50)

To protect beneficial uses, the Central Valley Water Board finds that the wastewater must be adequately treated and disinfected to prevent disease. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DDW in the Title 22 regulation from May through October. The Discharger shall also operate the filters in all other months.

The Central Valley Water Board generally follows a November 1980 general recommendations by DDW on the appropriate levels of disinfection for protection of body-contact recreation in waters downstream of a sewage treatment plant discharge. The general, the DDW recommendation allows a discharge of secondary treatment with chlorination when there is a minimum of 20-to-1 dilution (river to discharge), and suggests tertiary filtration when less than 20-to-1 dilution is available. The DDW recommendations are a "rule of thumb" and are not regulation. Site-specific disinfection recommendations are often sought from DDW in preparing NPDES permits. In this instance, DDW has recommended Title 22 or equivalent filtration and disinfection during May-October, which includes periods of highest anticipated body contract recreation. DDW has also concurred that during November-April, this stringent level of treatment is not necessary. The Discharger will, however, filter treated effluent at Title 22-equivalent rates up to the design capacity of the filters, resulting in Title 22 equivalent filtration of the great majority of all flows year-around even at full permitted discharge rates. The seasonal differences allow the Discharger to avoid unnecessary costs to provide filtration of peak flows. DDW has concurred with the seasonal requirements and the Discharger is proceeding with its compliance project. In addition to effluent limitations for pathogens, this order includes effluent limitations for BOD and TSS, and filter performance specifications for turbidity that are consistent with tertiary treatment.

The Discharger has determined that the existing pure oxygen activated sludge secondary treatment system will be replaced by a BNR secondary wastewater treatment system. Pilot testing of the BNR secondary treatment system indicates that the BNR secondary effluent will have lower pathogen concentrations (cryptosporidium and giardia) than the current pure oxygen activated sludge secondary effluent, which will reduce the pathogens discharged to the Sacramento River relative to the current wastewater discharge, even without addition of effluent filtration[1]. Expansion and enhancement of wastewater storage within the wastewater treatment plant that will occur as part of the treatment plant upgrades will allow the Discharger improved control of the varying flow of wastewater, including during peak wet weather flow events. The Discharger would need to construct an effluent filtration system with a design effluent flow of 330 MGD in order to filter peak wet weather flows that occur during sustained wet weather. The 330 MGD flow takes into consideration the flow equalization that will occur with operation of the wastewater storage facilities.

Construction of a smaller filtration system to treat a discharge flow of 217 MGD will allow the Discharger to fully filter the wastewater during dry weather, which would include the times when dilution is the lowest in the Sacramento River and when potential for public contact with the discharged wastewater is the highest, and additionally during most wet weather periods. The Discharger estimated that filters designed for 217 MGD, operated year-round, would provide tertiary filtration for approximately 97 percent of the annual wastewater flow discharged from

[1] Technical Memorandum to District Leadership from Ken Abraham, "Draft Answers to Question Raised by Regional Water Quality Board", 28 February 2014.

the Facility to the Sacramento River[1]. At this filter design, between May and October the Title 22, or equivalent, disinfection requirements would be met. Between November and April, the filters would be operated to the 217 MGD design capacity. Treated wastewater effluent flows to the river or storage basins in excess of the 217 MGD design capacity would not be filtered, but would be of improved BNR secondary effluent quality with a reduced pathogen concentration relative to the current wastewater discharge. Unfiltered BNR effluent and filtered wastewater would be disinfected and combined with reclaimed water in excess of demands, and dechlorinated prior to discharge to the Sacramento River. This combined discharge would occur at times when wet weather and other conditions minimize public use of the river, and high river dilution is generally available, minimizing any increased risk of public contact with wastewater pathogens. By allowing for construction of a smaller filtration facility, the Discharger estimated savings of over $100 million in capital and operational costs.

Between November and April, when potential exposure is less extensive, strict compliance with the Title 22, or equivalent, disinfection criteria is not required. However, as described in Section II.A.2 of this Fact Sheet, the Facility will be operated to provide filtration for effluent discharges up to 217 MGD resulting in most effluent receiving filtration. DDW was consulted in the development of the seasonally-based requirements of this order and agrees the beneficial uses of the Sacramento River will be protected with seasonal total coliform effluent limitations.

(c) **WQBEL's.** In accordance with the requirements of Title 22, this Order includes effluent limitations for total coliform organisms applicable between May and October of 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum. Between November and April, the effluent limitations for total coliform organisms are 2.2 MPN/100 mL as a monthly median; 23 MPN/100 mL as a weekly median; and 240 MPN/100 mL, as an instantaneous maximum.

The tertiary treatment process, or equivalent, is capable of reliably treating wastewater to a turbidity level of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the DDW recommended Title 22 disinfection criteria and ensure effective performance of the filters year-round, this Order includes operational specifications for turbidity of 2 NTU as a daily average; 5 NTU, not to be exceeded more than 5 percent of the time within a 24-hour period; and 10 NTU as an instantaneous maximum, to be met prior to disinfection of effluent from the tertiary filters.

[1] Technical Memorandum to District Leadership from Ken Abraham, "Additional Tables Calculation Projected Blend Volumes", 11 March 2014.

This Order contains effluent limitations for BOD_5, total coliform organisms, and TSS and requires a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The Central Valley Water Board previously considered the factors in Water Code section 13241 in establishing these requirements in Order R5-2010-0114-04.

Final WQBEL's for BOD_5 and TSS are based on the technical capability of the tertiary process, which is necessary to protect the beneficial uses of the receiving water. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed. Therefore, this Order requires AMEL's for BOD_5 and TSS of 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the AWEL's and AMEL's, MDEL's for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

(d) **Plant Performance and Attainability.** New or modified control measures will be necessary in order to comply with the effluent limitations for BOD_5, total coliform organisms, and TSS, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for filtration are a new regulatory requirement within Order R5-2010-0114-04, which was adopted after 1 July 2000. The Discharger submitted an infeasibility analysis dated August 2010 for compliance with these disinfection requirements. Therefore, a compliance time schedule for compliance with the BOD_5, total coliform organisms, and TSS effluent limitations and a requirement to provide Title 22 (or equivalent) tertiary filtration is established in this Order.

xiii. **pH**

(a) **WQO.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *"...pH shall not be depressed below 6.5 nor raised above 8.5."*

(b) **RPA Results.** Raw domestic wastewater inherently has variable pH. Additionally, some wastewater treatment processes can increase or decrease wastewater pH.

Based on 1,096 samples collected between January 2012 and December 2014, the maximum pH reported was 7.0 and the minimum was 6.2. Although the minimum effluent pH is lower than the Basin Plan objective, based on modeling using the Discharger's dynamic model, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan objectives in the receiving water.

(c) **WQBEL's.** WQBEL's for pH are not required, because there is no reasonable potential. As discussed in Section IV.B, above, the

technology-based effluent limitations for pH are 6.0 and 9.0, as an instantaneous minimum and maximum, respectively. Effluent limitations for pH of 6.0 as an instantaneous minimum and 8.0 as an instantaneous maximum are included in this Order. The instantaneous maximum effluent limitation is more stringent than the technology-based effluent limitation and is based on Facility performance and considering ammonia toxicity, which varies based on pH. The instantaneous minimum effluent limitation of 6.0 is based on the technology-based effluent limitation, and has also been demonstrated through modeling that the limit ensures compliance with the Basin Plan's minimum objective in the receiving water.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the maximum pH of 7.0 does not exceed the instantaneous maximum effluent limitation and the minimum pH of 6.2 is greater than the instantaneous minimum effluent limitation. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

xiv. **Settleable Solids**

(a) **WQO.** For inland surface waters, the Basin Plan states that "[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses."

(b) **RPA Results.** The discharge of domestic wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's narrative objective for settleable solids. There was one detection of 0.1ml/L on 11 November 2012 out of 1130 samples between 2012 and 2014. Currently, the Discharger only provides secondary treatment; therefore, settleable solids in the discharge has reasonable potential to cause or contribute to an in-stream excursion above the narrative toxicity objective or Basin Plan numeric objectives and waste load allocation.

(c) **WQBELs.** This Order contains average monthly and average weekly effluent limitations for settleable solids. Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order.

(d) **Plant Performance and Attainability.** Based on existing performance the Facility can immediately comply with the final WQBELs for settleable solids.

xv. **Temperature**

(a) **WQO.** The Thermal Plan requires that, "*The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.*"

(b) **RPA Results.** The highest daily temperature of the discharge was more than 20°F above the natural receiving water temperature. The discharge is an elevated temperature waste, which could cause or threaten to cause the receiving water temperature to exceed temperature objectives established in the Thermal Plan. Therefore, reasonable potential exists for temperature and WQBEL's are required.

(c) **WQBEL's.** Consistent with the Thermal Plan exceptions described in Section III.C.1.c of this Fact Sheet, this Order requires that the maximum

temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F from 1 May through 30 September and more than 25°F from 1 October through 30 April. However, these alternative effluent limitations based on the Thermal Plan exception are not effective unless the Central Valley Water Board receives concurrence from the State Water Board regarding the Thermal Plan exceptions. Therefore, effective immediately, the maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F, year-round.

(d) **Plant Performance and Attainability.** The alternative effluent limitation was retained from Order R5-2010-0114-04 and the Discharger has demonstrated continuous compliance with this effluent limitation. The Central Valley Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible. The Discharger is unable to immediately comply with the effluent limitation without the exception. The Discharger submitted an infeasibility analysis and requested a time schedule order (TSO). The Central Valley Water Board may consider a TSO at a later board hearing.

4. WQBEL Calculations

a. This Order includes WQBEL's for ammonia, bis (2-ethylhexyl) phthalate, BOD_5, carbon tetrachloride, chlorine residual, chlorodibromomethane, copper, cyanide, dichlorobromomethane, methylmercury, methylene chloride, nitrate plus nitrite, pH, total coliform organisms, temperature, and TSS. The general methodology for calculating WQBEL's based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$ECA = C + D(C - B)$ *where C>B, and*
$ECA = C$ *where C≤B*

where:

ECA = effluent concentration allowance
D = dilution credit
C = the priority pollutant criterion/objective
B = the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECA's based on MCL's, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. **Basin Plan Objectives and MCL's.** For WQBEL's based on site-specific numeric Basin Plan objectives or MCL's, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. **Aquatic Toxicity Criteria.** WQBEL's based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECA's are converted to equivalent LTA's (i.e., LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. **Human Health Criteria.** WQBEL's based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The AMEL is set equal to ECA and a statistical multiplier was used to calculate the MDEL.

$$AMEL = mult_{AMEL}[\min(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic})]$$

$$MDEL = mult_{MDEL}[\min(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}})]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where:
$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting acute ECA to LTA_{acute}
M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

f. **Dynamic Model.** Section 1.4.D. of the SIP allows the use of a dynamic model to calculate WQBEL's. Chapter 5.4.1 of the TSD (see page 101) provides guidance for deriving WQBEL's using a dynamic model. A three step process has been used in this Order to derive WQBEL's for cyanide when calculating the chronic long-term average using the Discharger's dynamic model[1].

i. A point of compliance (edge of mixing zone) is selected. For acute aquatic life criteria no mixing zone has been allowed. For chronic aquatic life criteria the edge of the chronic mixing zone is selected.

ii. An LTA is developed for chronic criteria using the dynamic model (i.e., $LTA_{chronic}$) by iteratively running the dynamic model with successively lower [or higher] LTA's until the model shows compliance with the water quality criteria at the edge of the mixing zone at the appropriate frequency of compliance and averaging period (e.g., chronic criteria are based on a 4-day exposure). The acute LTA was calculated using the steady-state model, because an acute mixing zone has not been allowed in this Order.

[1] These procedures are discussed in more detail in a Technical Memorandum from Larry Walker Associates to SRCSD titled, "Calculation of WQBEL via Output from a Dynamic Model – DRAFT", 23 February 2009.

iii. The LTA and CV are used to derive MDEL's and AMEL's using the steady-state model procedures described in Step 5 of Section 1.4.B of the SIP. WQBEL's are calculated using the LTA_{acute} and $LTA_{chronic}$ and the more stringent WQBEL's are applied.

Summary of Water Quality-Based Effluent Limitations Discharge Point 001

Table F-16. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	20	--	--
	lbs/day[1]	15,100	22,700	30,200	--	--
pH	standard units	--	--	--	6.0	8.0
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[1]	15,100	22,700	30,200	--	--
Priority Pollutants						
Bis (2-Ethylhexyl) Phthalate	µg/L	8.9	--	20	--	--
Carbon Tetrachloride	µg/L	2.9	--	5.3	--	--
Chlorodibromomethane	µg/L	14	--	27	--	--
Copper, Total Recoverable	µg/L	8.6	--	12	--	--
Cyanide, Total (as CN)	µg/L	13	--	22	--	--
Dichlorobromomethane	µg/L	23	--	36	--	--
Methylene Chloride	µg/L	4.7	--	11	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)[1] 1 April – 31 October	mg/L	1.5	1.7	--	--	--
	lbs/day[1]	2,264	2,566	--	--	--
Ammonia Nitrogen, Total (as N)[1] 1 November – 31 March	mg/L	2.4	3.0	--	--	--
	lbs/day[1]	3,622	4,529	--	--	--
Chlorine, Total Residual	mg/L	--	0.011[2]	0.019[3]	--	--
Diazinon and Chlorpyrifos	µg/L	[4]	--	[5]	--	--
Electrical Conductivity @ 25°C	µmhos/cm	1,139[6]	--	--	--	--
Methylmercury	grams/year	89[7]	--	--	--	--
Nitrate Plus Nitrite (as N)	mg/L	10	22	--	--	--
Settleable Solids	mL/L	0.1	0.2	--	--	--
Temperature	°F	--	--	[8]	--	--

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Total Coliform Organisms 1 May – 31 October	MPN/100 mL	--	23[9]/2.2[10]	--	--	240
Total Coliform Organisms	MPN/100 mL	2.2[11]	23[12]	--	--	240

1 Based on an average dry weather flow of 181 million gallons per day (MGD).
2 Applied as a 4-day average effluent limitation.
3 Applied as a 1-hour average effluent limitation.
4 Average Monthly Effluent Limitation

$$S_{AMEL} = \frac{C_{D\,M-AVG}}{0.079} + \frac{C_{D\,M-AVG}}{0.012} \leq 1.0$$

$C_{D\,M\text{-}AVG}$ = average monthly diazinon effluent concentration in µg/L.
$C_{C\,M\text{-}AVG}$ = average monthly chlorpyrifos effluent concentration in µg/L.

5 Average Weekly Effluent Limitation

$$S_{AWEL} = \frac{C_{D\,W-AVG}}{0.14} + \frac{C_{C\,W-AVG}}{0.021} \leq 1.0$$

$C_{D\,W\text{-}AVG}$ = average weekly diazinon effluent concentration in µg/L.
$C_{C\,W\text{-}AVG}$ = average weekly chlorpyrifos effluent concentration in µg/L.

6 Applied as an annual average effluent limitation.
7 The effluent calendar year annual methylmercury load shall not exceed 89 grams, in accordance with the Delta Mercury Control Program effective 31 December 2020.
8 Effective immediately, the maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F, year-round. If the State Water Board concurs with the Thermal Plan exception, the alternative effluent limitations become effective, such that the maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F from 1 May through 30 September and more than 25°F from 1 October through 30 April.
9 Not to be exceeded more than once in any 30-day period.
10 Applied as a 7-day median effluent limitation.
11 Applied as a monthly median effluent limitation.
12 Applied as a weekly median effluent limitation.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E, section V). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00) The Basin Plan also states that, "*…effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate…*".

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is

not restricted to one particular RPA method. Therefore, due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA. U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" The Facility is a POTW that treats domestic wastewater containing ammonia and other acutely toxic pollutants. Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc.*" Consistent with Order R5-2010-0114-04, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay	70%
Median for any three consecutive bioassays	90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00.) Since the Facility is a POTW that is categorized as a major facility, the influent can be highly variable due to commercial, industrial, and other inputs. Therefore, it is assumed that the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires monthly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the Special Provision in section VI.C.2.a of the Order includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for Toxicity Reduction Evaluation (TRE) initiation if toxicity is demonstrated.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a

NPDES permit in the Los Angeles Region[1] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.*" The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 C.F.R. section 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a TRE in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

40 C.F.R section 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 C.F.R. section 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CF.R. section 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCL's) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations have been established in this Order for ammonia, BOD_5, and TSS because they are oxygen demanding substances. In addition, mass-based

[1] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

limits for methylmercury have been established in this Order in accordance with the Delta Methylmercury Control Program. Except for the pollutants listed above, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated based upon the average dry weather flows permitted in section IV.A.1.h of this Order.

2. Averaging Periods for Effluent Limitations

40 C.F.R. section 122.45 (d) requires average weekly and average monthly discharge limitations for POTW's unless impracticable. For BOD_5, pH, TSS, bis (2-ethylhexyl) phthalate, carbon tetrachloride, chlorodibromomethane, copper, cyanide, dichlorobromomethane, methylene chloride, and chlorine residual, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. For the CTR priority pollutant constituents (i.e., bis (2-ethylhexyl) phthalate, carbon tetrachloride, chlorodibromomethane, copper, cyanide, dichlorobromomethane, methylene chloride), a maximum daily effluent limitation has been applied in lieu of an average weekly effluent limitation in accordance with the SIP. The rationale for using shorter averaging periods the non-priority pollutants (i.e., BOD, TSS, pH, and chlorine residual) is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA sections 402(o) or 303(d)(4), or, where applicable, 40 C.F.R. section 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in Order R5-2010-0114-04, with the exception of effluent limitations for aluminum, bis (2-ethylhexyl) phthalate, chlorodibromomethane, copper, cyanide, dibenzo(a,h)anthracene, dichlorobromomethane, electrical conductivity, manganese, methyl tertiary butyl ether, pentachlorophenol, and tetrachloroethylene. The effluent limitations for these pollutants are less stringent than those in Order R5-2010-0114-04. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent WQBEL's "*except in compliance with Section 303(d)(4).*" CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

   i. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL's or WLA's will assure the attainment of such water quality standards.

   ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

   The Sacramento River is considered an attainment water for aluminum, bis (2-ethylhexyl) phthalate, chlorodibromomethane, copper, cyanide, dibenzo(a,h)anthracene, dichlorobromomethane, electrical conductivity, manganese, methyl tertiary butyl ether, pentachlorophenol, and tetrachloroethylene

because the receiving water is not listed as impaired on the 303(d) list for these constituents.[1] As discussed in section IV.D.4, below, relaxation of the effluent limitations complies with federal and state antidegradation requirements. Thus, removal of the effluent limitations for aluminum, bis (2-ethylhexyl) phthalate, dibenzo(a,h)anthracene, manganese, methyl tertiary butyl ether, pentachlorophenol, and tetrachloroethylene and relaxation of effluent limitations for chlorodibromomethane, copper, cyanide, dichlorobromomethane, and electrical conductivity from Order R5-2010-0114-04 meets the exception in CWA section 303(d)(4)(B).

b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.a of this Fact Sheet, updated information that was not available at the time Order R5-2010-0114-04 was issued indicates that aluminum, dibenzo(a,h)anthracene, manganese, methyl tertiary butyl ether, pentachlorophenol, and tetrachloroethylene do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Additionally, updated information that was not available at the time Order R5-2010-0114-04 was issued indicates that less stringent effluent limitations for bis (2-ethylhexyl) phthalate, chlorodibromomethane, copper, cyanide, dichlorobromomethane, and electrical conductivity satisfy the requirements in CWA section 402(o)(2). The updated information that supports the removal and relaxation of effluent limitations for these constituents includes the following:

i. **Aluminum.** Effluent monitoring data collected between January 2012 and December 2014 indicates that aluminum in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL or NAWQC acute criterion.

ii. **Bis (2-ethylhexyl) phthalate.** Effluent monitoring data collected between January 2012 and December 2014 indicates that bis (2-ethylhexyl) phthalate in the discharge cannot meet the performance based effluent limit in Order R5-2010-0014-04. Assimilative capacity and dilution is available for bis (2-ethylhexyl) phthalate in the receiving water as discussed in section IV.C.3. Therefore, this Order includes less stringent effluent limitations for bis (2-ethylhexyl) phthalate based on the updated monitoring data.

iii. **Chlorodibromomethane and Dichlorobromomethane.** Order R5-2010-0014-04 established performance-based MDELs for chlorodibromomethane and dichlorobromomethane, because the entire dilution credit was not needed for compliance based on the Discharger pilot plant (Phase I testing) to evaluate biological nutrient removal and disinfection alternatives. However, the Discharger's Phase II pilot study during 2014 showed the maximum concentrations of chlorodibromomethane and dichlorobromomethane would exceed the MDELs in Order R5-2010-0014-04. This Order relaxes the effluent limitations for chlorodibromomethane and dichlorobromomethane from Order

[1] "*The exceptions in Section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list.*" State Water Board Order WQ 2008-0006, Berry Petroleum Company, Poso Creek/McVan Facility.

R5-2010-0114-04. The Phase II pilot testing data submitted by the Discharger is considered new information by the Central Valley Water Board which justifies the application of less stringent effluent limitations.

iv. **Copper.** Previous Order R5-2010-0114-04 included effluent limitations for copper without the allowance for dilution, because based on Facility performance end-of-pipe effluent limits could be met. The Discharger has provided updated information indicating that effluent concentrations of copper are increasing due to recent drought conditions and water conservation efforts and requested dilution for copper. This Order allows a chronic mixing zone for copper resulting in less stringent effluent limitations for copper, which are based on updated dynamic modeling results and effluent characteristics.

v. **Cyanide.** The Discharger provided updated dynamic modeling results in a 14 August 2014 *Mixing Zone Request* (Larry Walker Associates) that reflected effluent data collected between January 2012 and December 2014 and an expanded historical ambient dataset to include data from 2005 to 2014.This Order includes less stringent effluent limitations for cyanide based on the updated dynamic modeling results.

vi. **Dibenzo(a,h)anthracene.** Effluent and receiving water monitoring data collected between January 2012 and December 2014 for dibenzo(a,h)anthracene indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criteria.

vii. **Electrical Conductivity.** Updated effluent data collected between January 2012 and December 2014 indicates that effluent concentrations of electrical conductivity are increasing due to recent drought conditions and water conservation efforts. Although the concentrations are increasing, as shown in section IV.C.3.a.x of this Fact Sheet, the mass loading of salinity is not increasing.

viii. **Manganese.** Effluent and receiving water monitoring data collected between January 2012 and December 2014for manganese indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

ix. **Methyl Tertiary Butyl Ether.** Effluent monitoring data collected between January 2012 and December 2014 indicates that methyl tertiary butyl ether in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.

x. **Pentachlorophenol.** Effluent and receiving water monitoring data collected between January 2012 and December 2014 for pentachlorophenol indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criteria.

xi. **Tetrachloroethylene.** Effluent and receiving water monitoring data collected between January 2012 and December 2014 for tetrachloroethylene indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criteria.

Thus, removal of the effluent limitations for aluminum, dibenzo(a,h)anthracene, manganese, methyl tertiary butyl ether, pentachlorophenol, and tetrachloroethylene, and the relaxation of the effluent limitations for bis (2-

ethylhexyl) phthalate, chlorodibromomethane, copper, cyanide, dichlorobromomethane, and electrical conductivity from Order R5-2010-0114-04 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the relaxation of effluent limitations based on new information that was not available at the time of permit issuance.

4. Antidegradation Policies

The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16. This Order provides for an increase in the volume and mass of pollutants discharged for bis (2-ethylhexyl) phthalate, copper, cyanide, chlorodibromomethane, and dichlorobromomethane. The increase will not have significant impacts on beneficial uses and will not cause a violation of water quality objectives. The increase in the mass of the discharge allows wastewater utility service necessary to accommodate housing and economic expansion in the area, and is considered to be a benefit to the people of the State. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge.

This Order removes effluent limitations for aluminum, dibenzo(a,h)anthracene, manganese, methyl tertiary butyl ether, pentachlorophenol, and tetrachloroethylene based on updated monitoring data demonstrating that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. The removal of WQBEL's for these parameters will not result in an increase in pollutant concentration or loading, a decrease in the level of treatment or control, or a reduction of water quality. Thus, the removal of effluent limitations for these constituents is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16.

This Order relaxes the effluent limitations for copper, cyanide, and bis (2-ethylhexyl) phthalate. The revised effluent limitations are based on allowance of mixing zones in accordance with the Basin Plan, the SIP, and EPA's Water Quality Standards handbook, 2nd Edition (updated July 2007) and TSD. As discussed in Finding IV.C.2.c of this Fact Sheet, the mixing zones comply with all applicable requirements and will not be adverse to the purpose of the state and federal antidegradation policies. Furthermore, the increase in the effluent limits for these constituents are minor resulting in use of less than 10% of the available assimilative capacity in the receiving water. According to USEPA's memorandum on Tier 2 Antidegradation Reviews and Significance Thresholds, any individual decision to lower water quality for non- bioaccumulative chemicals that is limited to 10% of the available assimilative capacity represents minimal risk to the receiving water and is fully consistent with the objectives and goals of the Clean Water Act. The minimal increase in these constituents is fully consistent with the antidegradation analysis performed in support of the prior Order (R5-2010-0114). The Central Valley Water Board staff finds that any lowering of water quality outside the mixing zone will be de minimus and will accommodate important economic or social development in the Sacramento area. Further, any change to water quality will not unreasonably affect present and anticipated beneficial uses and will not result in water quality less than prescribed in State Water Board policies or the Basin Plan. The measures implemented by the Discharger and required by this Order constitute BPTC. Thus, the relaxation of the effluent limitations for copper, cyanide, and bis (2-ethylhexyl) phthalate is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16.

This Order relaxes the effluent limitations for chlorodibromomethane and dichlorobromomethane. The revised effluent limitations are based on the Discharger's 2014 Phase II pilot testing of the biological nutrient removal and liquid chlorine disinfection. A complete antidegradation analysis "Antidegradation Analysis in Consideration of Water Quality-Based Effluent Limitations for Chlorodibromomethane and Dichlorobromomethane at the Sacramento Regional Wastewater Treatment Plant" was submitted by the Discharger in January 2016. The relaxed effluent limitations for chlorodibromomethane and dichlorobromomethane are within the available assimilative capacity of the Sacramento River and will not adversely impact the in-stream beneficial uses of the Sacramento River. Comparison of environmental and socioeconomic impacts of liquid chlorine disinfection with the alternatives (pre-ozonation and UV disinfection) shows that liquid chlorine disinfection providing best practicable treatment or control consistent with maximum benefit to the people of the State. The Central Valley Water Board finds that the increased loading of chlorodibromomethane and dichlorobromomethane is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16.

This Order relaxes the effluent limitations for electrical conductivity. Although updated effluent data indicates that effluent concentrations of electrical conductivity are increasing due to recent drought conditions and water conservation efforts, as shown in section IV.C.3.a.x of this Fact Sheet, the mass loading of salinity is not increasing, and the relaxed effluent limitations will not result in an increased mass loading to the receiving water. Thus, the relaxation of effluent limitations for electrical conductivity is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBEL's for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal requirements for BOD_5 and TSS. Restrictions on these constituents are discussed in section IV.B.2 of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards.

WQBEL's have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBEL's were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating the individual WQBEL's for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May, 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to 30 May 2000, but not approved by U.S. EPA before that date, are nonetheless "*applicable water quality standards for purposes of the CWA*" pursuant to 40 C.F.R. section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

Summary of Final Effluent Limitations
Discharge Point 001

Table F-17. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	181[2]	--	--	--	--	DC
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	20	--	--	TTC
	lbs/day[3]	15,100	22,700	30,200	--	--	
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.0	8.0	BP
Total Suspended Solids	mg/L	10	15	20	--	--	TTC
	lbs/day[3]	15,100	22,700	30,200	--	--	
	% Removal	85	--	--	--	--	CFR
Priority Pollutants							
Bis (2-Ethylhexyl) Phthalate	µg/L	8.9	--	20	--	--	CTR
Carbon Tetrachloride	µg/L	2.9	--	5.3	--	--	CTR
Chloro-dibromomethane	µg/L	14	--	27	--	--	CTR
Copper, Total Recoverable	µg/L	8.6	--	12	--	--	CTR
Cyanide, Total (as CN)	µg/L	13	--	22	--	--	CTR
Dichloro-bromomethane	µg/L	23	--	36	--	--	CTR
Methylene Chloride	µg/L	4.7	--	11	--	--	CTR
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N) 1 April – 31 October	mg/L	1.5	1.7	--	--	--	NAWQC
	lbs/day[3]	2,264	2,566	--	--	--	
Ammonia Nitrogen, Total (as N) 1 November – 31 March	mg/L	2.4	3.0	--	--	--	NAWQC
	lbs/day[3]	3,622	4,529	--	--	--	
Chlorine, Total Residual	mg/L	--	0.011[4]	0.019[5]	--	--	NAWQC
Diazinon and Chlorpyrifos	µg/L	[6]	--	[7]	--	--	TMDL

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Electrical Conductivity @ 25°C	µmhos/cm	1,139[8]	--	--	--	--	PB
Methylmercury	grams/year	89[9]	--	--	--	--	TMDL
Nitrate Plus Nitrite (as N)	mg/L	10	22	--	--	--	MCL
Settleable Solids	mL/L	0.1	0.2	--	--	--	BP
Temperature	°F	--	--	[10]	--	--	TP
Total Coliform Organisms 1 May – 31 October	MPN/100 mL	--	23[11]/2.2[12]	--	--	240	Title 22
Total Coliform Organisms	MPN/100 mL	2.2[13]	23[14]	--	--	240	Title 22
Acute Toxicity	% Survival	--	--	70[15]/90[16]	--	--	BP
Chronic Toxicity	TUc	--	--	Narrative[17]	--	--	BP

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	

[1] DC – Based on the design capacity of the Facility.
TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 C.F.R. part 133.
BP – Based on water quality objectives contained in the Basin Plan.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on U.S. EPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
TMDL – Based on the applicable TMDL.
PB – Based on Facility performance.
MCL – Based on the Primary Maximum Contaminant Level.
TP – Based on the Thermal Plan.
Title 22 – Based on DDW Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

[2] The average dry weather flow shall not exceed 181 MGD.

[3] Based on an average dry weather flow of 181 million gallons per day (MGD).

[4] Applied as a 4-day average effluent limitation.

[5] Applied as a 1-hour average effluent limitation.

[6] Average Monthly Effluent Limitation

$$S_{AMEL} = \frac{C_{D\,M-AVG}}{0.079} + \frac{C_{D\,M-AVG}}{0.012} \leq 1.0$$

$C_{D\,M\text{-}AVG}$ = average monthly diazinon effluent concentration in µg/L.
$C_{C\,M\text{-}AVG}$ = average monthly chlorpyrifos effluent concentration in µg/L.

[7] Average Weekly Effluent Limitation

$$S_{AWEL} = \frac{C_{D\,W-AVG}}{0.14} + \frac{C_{C\,W-AVG}}{0.021} \leq 1.0$$

$C_{D\,W\text{-}AVG}$ = average weekly diazinon effluent concentration in µg/L.
$C_{C\,W\text{-}AVG}$ = average weekly chlorpyrifos effluent concentration in µg/L.

[8] Applied as an annual average effluent limitation.

[9] The effluent calendar year annual methylmercury load shall not exceed 89 grams, in accordance with the Delta Mercury Control Program, effective 31 December 2020.

[10] Effective immediately, the maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F. If the State Water Board concurs with the Thermal Plan exception, the alternative effluent limitations become effective, such that the maximum temperature of the discharge shall not exceed the natural receiving water temperature at Monitoring Location RSWU-001 by more than 20°F from 1 May through 30 September and more than 25°F from 1 October through 30 April.

[11] Not to be exceeded more than once in any 30-day period.

[12] Applied as a 7-day median effluent limitation.

[13] Applied as a monthly median effluent limitation.

[14] Applied as a weekly median effluent limitation.

[15] 70% minimum of any one bioassay.

[16] 90% median for any three consecutive bioassays.

[17] There shall be no chronic toxicity in the effluent discharge.

E. Interim Effluent Limitations

The State Water Board's Resolution 2008-0025 "*Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits*" (Compliance Schedule Policy) requires the Central Valley Water Board to establish interim numeric effluent limitations in this Order for compliance schedules longer than 1 year. As discussed in section VI.B.7 of this Fact Sheet, the Central Valley Water Board is approving a compliance schedule longer than 1 year for ammonia, BOD_5, methylmercury, total coliform organisms, and TSS. The Compliance Schedule Policy requires that interim effluent limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent. The interim effluent limitations for ammonia and total mercury are based on Facility performance. The interim effluent limitations for BOD_5, total coliform organisms, and TSS are based on levels recommended by DDW for secondary treatment-level disinfection. Consistent with the Delta Mercury Control Program, this Order includes interim effluent limitations for total mercury based on Facility performance.

1. Compliance Schedules

a. **Ammonia and Seasonal Title 22 (or Equivalent) Requirements.** This Order contains final effluent limitations for ammonia, BOD_5, total coliform organisms, and TSS that are the same as those contained in Order R5-2010-0114-04, which were. more stringent than the limitations previously imposed and were based on a new interpretation of a narrative objective. The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the new limitations, as described below. Therefore, compliance schedules for compliance with the effluent limitations for ammonia, BOD_5, total coliform organisms, and TSS are retained in the Order.

i. **Demonstration that the Discharger needs time to implement actions to comply with a more stringent permit limitation specified to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard.** Table 2.2 of the Discharger's August 2010 Infeasibility Report identifies constituents with the potential to exceed effluent limitations in the proposed NPDES Permit based on monitoring data collected between June 2005 and July 2008, including ammonia, BOD_5, total coliform organisms, and TSS. The Discharger states that the requested compliance schedules are driven primarily by the need to construct treatment plant upgrades.

ii. **Diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts.** The Infeasibility Report stated that the Discharger has pretreatment program that regulates industrial discharges and an active source control program. The Discharger issues permits to significant and non-significant users which require monitoring of pollutants of concern and implementation of limits where deemed necessary to control a point source. Table 2-3 of the Infeasibility Report identified 33 categorical industrial users, 27 significant industrial users and 306 non-significant users. Potential sources of ammonia, BOD_5, TSS and total coliform organisms include domestic and non-domestic sources.

iii. **Source control efforts are currently underway or completed, including compliance with any pollution prevention programs that have been established.** The Discharger has active source reduction programs targeting

mercury, pesticides (including chlorpyrifos, diazinon and lindane) and waste medications.

iv. **A proposed schedule for additional source control measures or waste treatment.** Table 2-4 of the Infeasibility Report provided proposed compliance schedules, which, for ammonia, included pilot testing, design of improvements and construction to be achieved 10 years from the permit effective date of Order R5-2010-0114-04 and full compliance with effluent limitations by 1 December 2020. For BOD_5, TSS, and total coliform organisms, the Discharger proposed pilot testing, design and construction to be achieved 9 years from the permit effective date and full compliance with effluent limitations by 1 December 2019.[1]

v. **Data demonstrating current treatment facility performance to compare against existing permit effluent limits, as necessary to determine which is the more stringent interim permit effluent limit to apply if a schedule of compliance is granted.** Interim effluent limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent. The Discharger can consistently comply with the effluent limitations for BOD_5, total coliform organisms, and TSS required by Orders. 5-00-188 and R5-2010-0114-04. Therefore, this Order requires compliance with interim effluent limitations based on the effluent limitations required by Orders. 5-00-188 and R5-2010-0114-04. This Order retains the performance-based interim effluent limitations for ammonia from Order R5-2010-0114-04, which were based on Facility performance.

vi. **The highest discharge quality that can reasonably be achieved until final compliance is attained.** Compliance with the interim effluent limitations will ensure that the Discharger maintains the discharge at levels that can reasonably be achieved until final compliance is attained.

vii. **The proposed compliance schedule is as short as possible, given the type of facilities being constructed or programs being implemented, and industry experience with the time typically required to construct similar facilities or implement similar programs.** The Discharger determined in the Infeasibility Report that the compliance schedule is as short as possible. The estimated durations for each task and estimated completion dates were included in Table 2-4 of the Infeasibility Report. Interim performance-based MDEL's have been retained from Order R5-2010-0114-04 and are in effect through 11 May 2021 (ammonia) and 9 May 2023 (total coliform organisms) until the final limitations take effect. Order R5-2010-0114-04 required the Discharger to submit a Method of Compliance Workplan/Schedule to assure compliance with the final effluent limitations for ammonia, BOD_5, TSS, and total coliform organisms. In addition, Order R5-2010-0114-04 required the Discharger to prepare and implement a pollution prevention plan (PPP) for ammonia that is in compliance with Water Code section 13263.3(d)(3). This Order requires the Discharger to continue to implement the PPP. The interim numeric effluent limitations and source control measures will result in the

[1] The final compliance dates were originally 1 December 2020, but were stayed by certain orders issued by the Sacramento County Superior Court, Honorable Michael Kenny. The stays resulted in change, or shift by a period of time, in the compliance deadlines as well as in the schedule for certain steps toward compliance. The operative orders were issued by the Superior Court on 13 July 2012 and 6 May 2013.

highest discharge quality that can reasonably be achieved until final compliance is attained.

b. **Methylmercury.** This Order contains a new final effluent limitation for methylmercury based on the new objective that became effective on 20 October 2011. The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the new limitations, as described below. Therefore, a compliance schedule for compliance with the effluent limitations for methylmercury is established in the Order.

A compliance schedule is necessary because the Discharger must implement actions, including a Phase 1 Methylmercury Control Study and possible upgrades to the Facility, to comply with the final effluent limitations.

The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream. The Discharger has developed a PPP for mercury, which was updated on 31 August 2011, and provided annual progress reports during the term of Order R5-2010-0114-04. The Discharger identified dental and residential communities as the most significant contributors of mercury to the Facility, and the updated PPP proposed to continue a public outreach and education program, development of a dental mercury reduction program, continued monitoring, and potentially issuing local wastewater discharge permits if a significant source is identified.

The compliance schedule is as short as possible. The Central Valley Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Mercury Control Program during the Phase 1 Delta Mercury Control Program Review. Therefore, at this time it is uncertain what measures must be taken to consistently comply with the waste load allocation for methylmercury. The interim effluent limits and final compliance date may be modified at the completion of Phase 1.

Interim performance-based limitations have been established in this Order. The interim limitations were determined as described in section IV.E.2, below, and are in effect until the final limitations take effect. The interim numeric effluent limitations and source control measures will result in the highest discharge quality that can reasonably be achieved until final compliance is attained.

2. **Interim Limits for Ammonia, BOD_5, Methylmercury, Total Coliform Organisms, and TSS.** The Compliance Schedule Policy requires the Central Valley Water Board to establish interim requirements and dates for their achievement in the NPDES permit. Interim numeric effluent limitations are required for compliance schedules longer than 1 year. Interim effluent limitations must be based on current treatment plant performance or previous final permit limitations, whichever is more stringent. When feasible, interim limitations must correspond with final permit effluent limitations with respect to averaging bases (e.g., AMEL, MDEL, average monthly, etc.) for effluent limitations for which compliance protection is intended.

The interim effluent limitations for ammonia and total mercury are based on Facility performance. The interim effluent limitations for BOD_5, total coliform organisms, and TSS are based on levels recommended by DDW for secondary treatment-level disinfection.

For mercury, the Delta Mercury Control Program requires POTW's to limit their discharges of inorganic (total) mercury to Facility performance-based levels during

Phase 1. The interim inorganic (total) mercury effluent mass limit is to be derived using current, representative data and shall not exceed the 99.9th percentile of the 12-month running effluent inorganic (total) mercury mass loads. At the end of Phase 1, the interim inorganic (total) mercury mass limit will be re-evaluated and modified as appropriate. The Delta Mercury Control Program also requires interim limits established during Phase 1 and allocations will not be reduced as a result of early actions that result in reduced inorganic (total) mercury and/or methylmercury in discharges.

The interim limitations for total mercury in this Order are based on the current treatment plant performance. In developing the interim limitation, where there are 10 sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9 percent of the data points lie within 3.3 standard deviations of the mean (Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row). Therefore, the 99.9th percentile was determined using the mean plus 3.3 standard deviations of the available data.

Total mercury effluent data collected from January 2012 through December 2014 was used to determine performance-based interim effluent limitations. 12-month running mercury loads were calculated, the average and standard deviation of the 12-month running mercury loads were determined, and used to calculate the 99.9th percentile.

The Central Valley Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

The following table summarizes the calculations of the interim effluent limitations for total mercury based on the Facility's current performance (January 2012 through December 2014), which resulted in an interim limitation of 754 grams/year. However, this Order retains the existing performance-based effluent limitation for total mercury of 2.3 lbs/year (converted to 1,043 grams/year) from Order R5-2010-0114-04, which is consistent with the intent of the TMDL to not penalize dischargers for early actions to reduce mercury. **Effective immediately, and until 31 December 2030,** the effluent calendar annual total mercury load shall not exceed 1,043 grams. These interim effluent limitations shall apply in lieu of the final effluent limits for methylmercury.

Table F-18. Interim Effluent Limitation Calculation Summary

Parameter	Units	Maximum Effluent Concentration	Mean	Standard Deviation	Number of Samples	Interim Limitation
Mercury, Total Recoverable	grams/year	633	553	61	25	1,043[1]

[1] The interim total mercury limitation has been established as 1,043 grams/year, as discussed in the preceding paragraph.

F. Land Discharge Specifications – Not Applicable

G. Recycling Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

B. Groundwater

1. The beneficial uses of the underlying groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCL's in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 mL. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.

3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R.

section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Mercury.** The Delta Mercury Control Program was designed to proceed in two phases. Phase 1 spans a period of approximately 9 years. Phase 1 emphasizes studies and pilot projects to develop and evaluate management practices to control methylmercury. At the end of Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and wasteload allocations after implementing all reasonable load reduction strategies. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules may be adjusted at the end of Phase 1, or subsequent program reviews, as appropriate. Therefore, this Order may be reopened to address changes to the Delta Mercury Control Program.

b. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a TRE. This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

c. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for copper. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

d. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

e. **Electrical Conductivity (EC) Effluent Limits and Other Limits Based on Facility Performance.** This Order may be reopened to revise interim and/or final effluent limitations where Facility performance was considered in development of the limitations (e.g., performance-based effluent limitations for EC and ammonia) should the Discharger provide information demonstrating the increase in discharge concentrations have been caused by water conservation efforts, drought conditions, and/or the change in disinfection chemicals. This provision has been included because water conservation efforts over the past few years have resulted in